Solve the PDE’s

\[
\begin{align*}
\begin{cases}
x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} = z - xy \\
z(2, y) = y^2 + 1
\end{cases}
\end{align*}
\]

(1)

\[
(x + z) \frac{\partial z}{\partial x} + (y + z) \frac{\partial z}{\partial y} = x + y
\]

(2)

\[
\begin{align*}
\begin{cases}
x \frac{\partial z}{\partial x} - y \frac{\partial z}{\partial y} = z^2(x - 3y) \\
z(1, y) = -\frac{1}{y}
\end{cases}
\end{align*}
\]

(3)

\[
\begin{align*}
\begin{cases}
(y + 2z^2) \frac{\partial z}{\partial x} - 2x^2z \frac{\partial z}{\partial y} = x^2 \\
z(x, x^2) = x
\end{cases}
\end{align*}
\]

(4)